

Claims

1. Method for the production of fiber composites,
characterized in that staple fibers that are soaked and/or
impregnated with hardenable thermosetting synthetic resin
and cut to length are laid in a three-dimensional random
layer and thus are bound together.
2. Method according to claim 1, characterized in that staple
fibers with a length of 0.5 to 20 cm are processed.
3. Method according to claim 1 or 2, characterized in that
staple fibers on the basis of glass fibers are processed.
4. Method according to claim 1 or 2, characterized in that
staple fibers of plastic are processed.
5. Method according to claim 4, characterized in that staple
fibers of carbon and/or carbon fibers are processed.
6. Method according to one of the claims 1 to 4,
characterized in that thermoplastic hollow microspheres
are embedded in the staple fibers soaked in plastics for
volumizing the three-dimensional random layer before or
during laying of the same.
7. Method according to one of the claims 1 to 6,
characterized in that the cut staple fibers are wet with a
hardenable synthetic resin such as unsaturated polyester,
epoxy resin, PU resin, vinyl ester resin and/or phenolic resin
in an amount sufficient for soaking the absorbent staple
fibers to saturation, wherein cavities between the three-

dimensionally arranged staple fibers, however, remain open.

- 5 8. Method according to one of the claims 1 to 7,
characterized in that the three-dimensional random layer is
provided on at least one side with a smooth,
homogeneous, two-dimensional layer of non-volumized
fibers.
- 10 9. Method according to one of the claims 1 to 8,
characterized in that the three-dimensional random layer is
compressed, at least in places, to a homogeneous
composite layer that is free of bubbles.
- 15 10. Fiber composite consisting of a matrix (3) of hardened
thermoplastic synthetic resin and staple fibers (2)
embedded therein in three-dimensional random laying,
wherein the composite was produced in the open system.
11. Fiber composite according to claim 10, characterized
in that the matrix (3) includes cavities (7) that are
permeable to gas such as air and/or liquids.
- 20 12. Fiber composite according to claims 10 or 11,
characterized in that the matrix (3) contains cut staple
fibers (2) having a length of 0.5 to 20 cm.
- 25 13. Fiber composite according to claim 12, characterized
in that the staple fibers (2) are produced on the basis of
glass fibers or on the basis of synthetic fibers such as
carbon fibers.

14. Fiber composite according to one of the claims 10 to 13, characterized in that the cut staple fibers (2) are volumized by embedding of thermoplastic hollow microspheres.
- 5 15. Fiber composite according to one of the claims 10 to 14, characterized in that the three-dimensionally arranged staple fibers (2) are wet with a hardenable synthetic resin (e.g. unsaturated polyester, epoxy resin, PU resin, vinyl ester resin, phenolic resin) in an amount sufficient for
10 soaking the absorbent staple fiber bundles to saturation, wherein cavities (7) between the three-dimensionally arranged staple fibers, however, have remained open.
- 15 16. Fiber composite according to one of the claims 10 to 15, characterized in that the cut staple fibers (2) are arranged in the shape of a sandwich structure in which the first cover layer (5) consists of a smooth, homogeneous, two-dimensionally arranged layer of non-volumized fibers, the core layer (4) consists of a three-dimensionally arranged random layer of volumized staple fibers, and the
20 final third cover layer (6) again consists of a smooth, homogeneous, two-dimensionally arranged layer of non-volumized fibers.
- 25 17. Fiber composite according to one of the claims 10 to 16, characterized in that the cut staple fibers (2), in partial areas, are compressed to a homogeneous composite layer free of air bubbles by the generation of pressure, and that other partial areas remain in the three-dimensional random layer due to pressure-free processing.

- 5 18. Constructional component comprising a fiber composite
with the features according to one of the claims 10 to 17,
characterized in that the constructional component is a
fender, a bumper, a spoiler, an air deflector, a motor
cover for electric motors, a deck hatch, a flap gate, a
floor tile, a panel, a children's' toy such as a slide or a
gardening tool.